



The

GARzette

The Official Newsletter of the Gwinnett Amateur Radio Society
August 2020 <http://www.gars.org/> Volume 29, Issue 8



HamPi – The Raspberry Pi Ham Radio Software Collection by Dave Slotter, W3DJS

General Ham Radio Applications

- HamLib - Ham Radio Control Libraries
- grig - graphical user interface to the Ham Radio Control Libraries
- CHIRP - Radio Programming Software
- APRS Message App for JS8Call - GUI to send APRS messages via JS8Call
- QTel - EchoLink client
- QSSTV - Slow Scan TV (e.g. "Fax")
- Gpredict - Satellite prediction
- FreeDV - Free digital voice vocoder
- BlueDV - Client for D-Star and DMR
- WspryPi - WSPR software
- ADS-B Flight Tracking Software
- Pi3/4 Stats Monitor - by W4JK
- VOACAP - HF propagation prediction
- GPS Support
- Auto WiFi Hotspot - automatically turn your Pi into a WiFi hotspot whenever in the field!
- wxtoimg - NOAA weather imaging software
- twHamQTH - amateur callsign locator
- twclock - a world clock and automation tool for radio operators
- acfax - Receive faxes using your Raspberry Pi soundcard
- colrconv - converts client with support for various encoders and decoders
- d-rats - A communication tool for DMR and DSTAR
- fbb - Packet radio mailbox and relay
- geb - Utility to calculate long and short distances based on location
- glfer - Spectrogram display and QIF file viewer
- Xdx is a DX-Hamster client
- DXSpider - DX Cluster Server
- fecexam - Study tool for USA FCC commercial radio license exams.
- gnuaids / gnuradio - GNU Automatic Identification System receiver
- hamexam - Study guide for USA FCC amateur radio (ham radio) license examinations.
- hamfax - QSL-based shortwave fax
- inspectrum - tool for visualizing captured radio signals
- predict-gsat - Graphical Predict client
- splat - analyze point-to-point terrestrial RF communication links
- wwl - Calculates distance and azimuth between two Maidenhead locations

Logging Applications

- TrustedSQL - LotW client
- CQRLog - Ham Radio Logging Application
- PyQSO - Logging software (written in Python)
- klog - The Ham Radio Logging program
- tlf - console based ham radio contest logger
- tucnak2 - VHF/UHF/SHF Hamradio contest log version 2
- twlog - basic logging program for ham radio
- wsjtx_to_n3fjp - Logging adapter to allow WSJT-X to log to N3FJP
- xlog - GTK+ Logging program for Hamradio Operators

Antenna Ham Radio Applications

- antennavis - Antenna Visualization Software
- gsmc - A GTK Smith Chart Calculator for RF impedance matching
- nec2c - Translation of the NEC2 FORTRAN source code to the C language
- xneccview - NEC structure and gain pattern viewer
- yagituda - software to analyse performance of Yagi-Uda antennas

Digital Mode Ham Radio Applications

- WSJT-X - Weak Signal (FT8, FT4, etc) by WIJT
- GridTracer - Graphical mapping companion program for WSJT-X or JTDX
- JTDX - Alternate client for Weak signal (FT8, FT4, etc)
- JS8Call - Messaging built on top of FLDK protocol by KN4CRD
- JS8CallTools - Get Grid coordinates using GPS
- (FL)Digit is its own section below)
- gnss-sdr - GLONASS satellite system Software Defined Receiver
- linspk - amateur radio PSK31/RTTY program via soundcard
- multimon - multimon - program to decode radio transmissions
- multimon - digital radio捉摸 (decoding) decoder
- p2psk - a peer-to-peer PSK31/RTTY program for psk31
- twpsk - a psk program

ARS Applications

- XARS - APPS Radio System Digital Interface
- YARS - YAESU Radio System Application
- DARS - DAVIS Software ARS (AX25 packet radio application)
- ARS - Digital Radio ARS
- APRS-DIGI - APRS Digipeater and Gateway
- arsmon - So239 Card Amateur Packet Radio Monitor
- arsmon - APRS Monitor Suite
- arsmon - Retele program which interfaces with fldigi
- arsmon - QSO Modes (QSO simulation)
- arsmon - Right Angle Adapter Control Program
- flard - ARQ control and reliability for fldigi
- fltcluster - Telnet client to remote DX Cluster Servers
- fllog - Logbook application which can use same data files as fldigi
- flmig - Remote file migration
- flnet - Net Control Assistant for Net Activities (Check-In Application)
- flpost - NBEMS post office
- flwrap - File encapsulation and compression for transmission over amateur radio
- flkey - Winkeyer (or clone) control program for K1EL Winkeyer series

Morse Code Applications

Software Defined Radio

- CubicSDR - Software Defined Radio receiver
- cutesdr - Simple demodulation and spectrum display program
- GQRX - Software defined radio receiver
- SDRAngel - SDR player
- lysdr - Simple software-defined radio
- quisk - Software Defined Radio (SDR)
- SoapyAudio - Soapy SDR plugin for Audio devices
- SoapyHackRF - SoapySDR HackRF module
- SoapyMultiSDR - Multi-device support module for SoapySDR
- SoapyNetSDR - Soapy SDR module for NetSDR protocol
- SoapyRemote - Use any Soapy SDR remotely
- SoapyRTLSDR - Soapy SDR module for RTL SDR USB dongle
- SoapySDR - Vendor and platform neutral SDR support library
- SoapySDRPlay - Soapy SDR module for SDRPlay
- Support for Ettus SDR
- Support for SDRplay SDR
- Support for HackRF SDR

WinLink Applications

- Pat WinLink - WinLink for Raspberry Pi (and other platforms)
- ARDOP support for Pat WinLink
- ARDOP-GUI - Provides graphical representation of ARDOP connections
- Find ARDOP - Retrieves local ARDOP sources by K4MCC
- AX25 support for Pat WinLink
- LMON - a PACTOR++ Monitoring Utility for Linux

Morse Code Applications

- aldo - Morse code training program
- cw - sound characters as Morse code on the soundcard or console speaker
- cwepl - Text-based Morse tutor program
- gwepl - Graphical Morse tutor program
- cwdaemon - morse daemon for the serial or parallel port
- ehook2cw - convert ebooks to Morse MP3s/OGGs
- ehook2cwgui - GUI for ehook2cw
- morse - training program about morse-code for aspiring radio hams
- morse2wav - tool for decoding the morse codes from a KWM WAV file
- morsegen - convert file to ASCII morse code
- qrq - High speed Morse telegraphy trainer
- twcw - sends morse code via the sound card or serial card (Needs RTC installed)
- xdemorse - decode Morse signals to text
- rscw - Receive CW through Soundcard

Find out more at the next online GARS meeting Tuesday, August 11, 2020 at 7:00 pm!

Message from the President

Another month of COVID-19 restrictions for gatherings, but GARS continues to get our members together for online meetings and workshops along with our nets. We are getting some information that our regular "Pre-COVID" meeting location, the EAA690 Hangar at Briscoe Field may be ready to accept other activities while following state guidelines for cleaning and social distancing. With that said, the GARS Executive Committee is discussing when and how we may want to begin in person activities.

We have discussed some options including a "hybrid" option where we would hold an in person meeting for those comfortable meeting in limited numbers and special conditions and also live stream the meeting for those either unable, uncomfortable or hesitant to attend. This option may be possible for at least a few months while we continue to monitor COVID cases in the area. There are no firm plans yet, but continue to monitor the nets, GARS@groups.io or Discord for any announcements.

Have you had a chance to participate in our COVID Sprint weekly challenge? This is an activity from our own Dallas, KD4HDX, and it is easy to participate. Each week, look for 1x1 calls from special event stations or contact W1AW for contacts. Each station counts and submit your contacts each week. Each week is a new contest and an opportunity to be recognized.



"We have discussed some options including a 'hybrid' option where we would hold an in person meeting for those comfortable meeting in limited numbers..."

On a sad note, the Georgia Ham community lost an outstanding person. In July, we learned that Mike Swiderski, K4HBI, lost his battle with cancer and became a Silent Key. Mike was well known and active all around the state. For those who knew Mike, you always knew he had at least one of anything you might ever need and he was always glad to find that special part, board or even radio to help you. Mike, along with his wife Susan, AF4FO, were very active in GARS for a lot of

years. Mike and Susan traveled around the state to club meetings and hamfests during the years Susan served as Georgia Section Manager. Mike will be missed, but always remembered. Please keep Susan in your thoughts and prayers during this time. GARS will be honoring Mike with a brick with his name and call at the ARRL Diamond Terrace at W1AW.

Let's get on the air and hope to see you in the log.....

73,

WB4QDX, Club
President

A handwritten signature in black ink, appearing to read "John Adams".

"It is not the class of license the Amateur holds, but the class of the Amateur that holds the license."

[Author Unknown]

GARS August Meeting and Workshop

**HamPi – The Raspberry Pi
Ham Radio Software Collection**

by Dave Slotter, W3DJS

Tuesday, August 11, 2020 7:00 pm

Parks on the Air (POTA)

by Bill Cherepy, WB4WTN

Tuesday, August 18, 2020 7:00 pm

**GARS Meetings and Workshops
will be held online until further notice.
See <http://www.gars.org> for more information.**

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GARS Communications	
2 Meter Repeaters 147.075(+) MHz Tone 82.5 147.255(+) MHz Tone 107.2	6 Meter Repeater 53.110 (-1 MHz) No Tone (Offline for Maintenance)
1.25 Meter Repeater 224.580(-) MHz Tone 100.0, 1.6 MHz Offset	Other Resources: APRS 144.390 -- 1200 Baud W4GR
70 Cm Repeaters 444.525(+) MHz Tone 82.5 442.100(+) MHz Tone 100 442.325(+) MHz Tone 100	D-STAR WD4STR 145.060 + (1.4 MHz) 440.550 + (5 MHz)

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The *GARzette* is the official monthly newsletter of the Gwinnett Amateur Radio Society, serving its members and other persons interested in the advancement of the Amateur Radio art.

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If possible, bring your articles to the monthly meeting in Microsoft Word or rich text (.rtf) or text or HTML format or by e-mail to editor@gars.org. Artwork can be accepted in most any graphics format and can be submitted via e-mail to the same address. Alternate means of submittal can be arranged when necessary.

In keeping with the Amateur Radio spirit, permission is hereby granted for the reproduction of The *GARzette* articles by other Amateur Radio club newsletters provided that proper credit is given to the individual author and *The GARzette*.

The GARzette is published each month with the assistance of Norm Schklar, WA4ZXV who prints copies for distribution at meetings, etc. and Dave Bruse, W4DTR, who distributes the news letter electronically.

Deadline for submissions is the 28th of each month for inclusion in the following month's issue.

For additional information view our Website at: <http://www.gars.org>

Newsletter Editor: editor@gars.org Bill Eggers—WB2RIS 470-238-9603

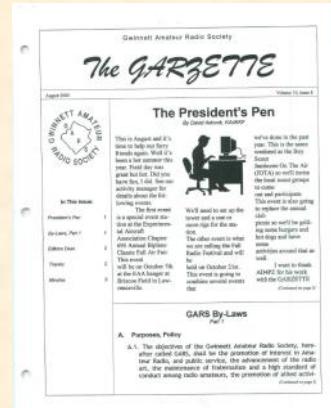


GARS Happenings

20 Years ago in the August 2000 GARzette:

- The latest GARS By-laws are posted;
- Upcoming events announced: Special Event Station for EAA 690 Annual Biplane Classic Fall Air Fair, October 7th; Fall Radio Festival on October 21st (same weekend as JOTA);
- Due to work issues, GARzette editor Victor Gann, W4VEG, announces that the September 2000 issue of the GARzette will be his last as the editor.

You can always browse the GARzette archive at <http://www.gars.org/newsletters>



73, *Bill*, WB2RIS, GARzette Editor

Mike Swiderski, K4HBI (SK)

The Amateur Radio community in Georgia has lost one of its great contributors. Mike Swiderski, K4HBI, became an SK on Saturday after fighting a long battle with cancer. He is survived by his wife and partner Susan, AF4FO, who was a former GARS President and ARRL Section Manager for Georgia for many years.

Mike was one of the most active and knowledgeable Hams and some many relied on his expertise for many years. He served as an ARRL Official Observer in Georgia for many years and offered guidance and help to many of us. While Susan was Section Manager, Mike would travel with her across the state for club meetings and hamfests sharing his knowledge. Those who knew him would always come to Mike looking for that special or rare part because they knew Mike had one or two in his "warehouse" of radio equipment and parts.

Mike will be missed and will always stand out as one who contributed so much to Amateur Radio. Please keep Susan and their family in your thoughts and prayers as we honor Mike Swiderski, K4HBI, SK.

Susan Swiderski AF4FO posted this on Facebook:

I believe in the power of prayer. Thank you all so much. Mike passed this morning, and miracle of miracle, in spite of the horrific pain the doctors told me to expect, he didn't have any. He passed peacefully, and I believe you all played a part in that blessing. Thank you.

In case you were wanting to hear of services for Mike like many of us were, Susan Swiderski made the following announcement regarding services:

"I'm afraid there isn't going to be a service. That's what he... we... wanted. Besides, with that COVID stuff, gathering together with a bunch of friends isn't much of an option these days."

GARS HELP WANTED

- GARzette Editor — Looking for someone to become the next GARzette Editor, starting off as a GARzette Committee member / Assistant Editor. Experience with Microsoft Publisher would be nice, but any experience with Microsoft Office products is helpful. You will be trained in the use of Microsoft Publisher. Most of the content is supplied by others, but occasionally you may wish to write content, especially in your area of expertise. If you are interested, please contact Bill Eggers, WB2RIS at editor@gars.org.

If you're interested in volunteering for one of these positions, please contact one of the GARS Officers. Supporting GARS activities is an important part of what we do and help from club members is needed.

[PS— Articles to publish in the GARzette, either written by GARS members or published elsewhere, are always welcome. —Ed.]

GARS Happenings (Cont'd)

Field Day Recognition

The following Field Day ADIF files were submitted for recognition:

AB4NX	AF4FG	K4CQO	K4VBM
KA4KKF	KD4HNX (K4G)	KD4YDD	KJ4CNC
KN4VCQ	KX4HA	N4COR	N4NQ
N4TRB	N7GRB	W3DJS	W4DTR
W4GR	W4KDA	W4KLY	W4KYW
WA4HNL	WA4ZXV	WB4WTN	WD4JEM

There are a few logs missing, but we still had a very impressive level of participation. Thanks to all who participated in Field Day and listed GARS as the club in their submission. Out of 3,567 contacts recorded, here are the results:

NN4K made the most CW contacts with 268;
KD4HNX made the most PHONE contacts with 271;
W3DJS made the most Digital contacts with 354;
W3DJS also made the most overall contacts with 360.

Thanks to all GARS members who participated in this unique 2020 Field Day experience!

73, *Dave* W4DTR

QSO Today Virtual Ham Expo



QSO Today's **Virtual Ham Expo** featured a Youth Forum with live video presentations by GARS member Audrey, KM4BUN and Jack McElroy, KM4ZIA. The Cumming, Georgia sister and brother duo were among a wide variety of experts during the Expo's two day run August 8-9, 2020.

Carole Perry, WB2MGP moderated the three-hour Youth In Ham Radio Forum on August 9. Jack was first up with his talk "High Flying Kids With High Altitude Balloons." Audrey followed with her talk, Getting Girls Involved In Science, Technology, Engineering and Math, Specifically Amateur Radio!

Former GARS member John Ackermann, N8UR, gave a presentation on the state of the art in GPS technology, titled "GPS Today".

GARS Happenings (Cont'd)

GARS Scholarship



July 27, 2020

Gwinnett Amateur Radio Society
Norman Schklar, WA4ZXV

Dear Friends,

On behalf of the ARRL Foundation Officers and Board, I am pleased to announce the 2020 recipient of The Gwinnett Amateur Radio Society Scholarship in the amount of \$1000.

Ryan Bibby, KN4RQL, Fayetteville, GA has been selected for The Gwinnett Amateur Radio Society Scholarship from an outstanding group of applicants. Scholarship recipients were recently notified of their awards, and we have already had many replies conveying their excitement and appreciation.

Scholarships through the ARRL Foundation would not be available without the support of thoughtful and generous sponsors such as you. Thank you for making The Gwinnett Amateur Radio Society Scholarship possible, and for aiding a student Amateur Radio operator in his/her pursuit of their higher education. I am confident that these young people will be successful in their future careers, and in representing Amateur Radio as well.

Again, many thanks for your support of this award. If you have any questions, please contact ARRL Foundation Secretary Melissa Stemmer, KA7CLO at ARRL (mstemmer@arrl.org or 860-594-0348).

73, .

Dr. David Woolweaver, K5RAV
President
ARRL Foundation

Local VE Testing Sessions

North Fulton Amateur Radio League (NFARL)

The VE Team will be holding its first exam session since February this Saturday, August 8th. [The next session is scheduled for September 12th. Check <http://www.nfarl.org/testSessions.html> for more information. - Ed.] All license class exams will be available. The exam session will be held at Slopes BBQ, 34 Crossville Road, Roswell, GA, 30075. Hours are 9:00 - 11:00 AM.

The exam fee is \$15 cash. Other Details:

Seating limited to 8 candidates.

No walk-ins accepted.

Pre-registration via email to nv4c.ian@gmail.com required. Phone reservations not accepted.

Please do NOT register if you are not sure you will make it. Seating is limited and we want to be sure everyone who wants to test can do so.

Registration will close at 11:59 PM on Thursday, July 9. That gives Ian time to know what to expect Saturday, and accommodate replacements for cancellations.

Masks required. No mask, no admittance.

Enter the building via the side entrance.

Please pre-register with the FCC for an FCC Registration Number at <https://apps.fcc.gov/cores/userLogin.do>

Please pre-fill and bring the NCVEC Quick Form 605, found at http://www.arrl.org/files/file/VEs/605%20Form_2020_Fully%20Interactive.pdf

Please also bring the following:

Government-issued photo ID

Pen and pencil

If upgrading, copy of current license

Calculator (as stand-alone device) if you want to use one

Source: <http://www.nfarl.org/testSessions.html>

Stephens County Amateur Radio Society

VE session (September 19, 2020) from 1 till 4 pm in Lavonia GA at 1240 E. Main St, at the white gazebo. [Lavonia, GA is off I-85 near the Georgia / North Carolina border... - Ed.]

If you need to test please get a hold of us at (kr4cw1@gmail.com). We are working on a 2nd test session , if you would like to be apart of it please send us a contact email to club email and will be glad to help you on the prelist of this....

We will be giving All Tests (Tech, General, Extra) Cost will be \$15.00 must have ID and copy of License, if you're upgrading...if it's your first time taking a test please go to the FCC website and sign up for a FRN number and create your Account. Here is the link to get started: <https://apps.fcc.gov/coresWeb/regEntityType.do>

Please make sure you print this off and bring with you, so you will have your FRN number. Without this we can not submit your test.

Source: <http://www.sc-ars.org/>

Why The Sideband Convention?

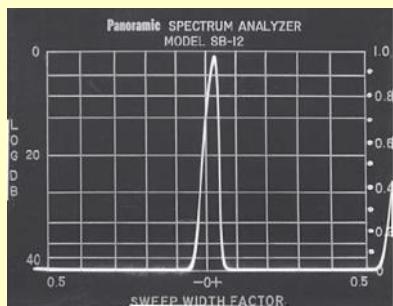
Why the Sideband Conventions? The Rest of the Story...

Brian R. Page, N4TRB

In 1963, I was an 8-year old shortwave listener, tuning into international broadcasters such as Radio Moscow, the BBC, and Radio Netherlands via their relay site on the island of Bonaire in the Netherlands Antilles. Shortwave listening was a great way to learn about world geography. Along with the broadcasters, I also tuned into the local amateur radio operators rag chewing on 75 meters, at least I did for a few months. Then, strangely, although I could hear them, I could no longer understand them. Their voices were all garbled, sounding like Donald Duck, only worse. It turns out that 1963 was a pivotal year for hams. Single sideband (SSB) had arrived *en masse* and in the space of a short time, the amplitude modulation (AM) that my little receiver understood practically disappeared from the ham bands.

Not long ago, a club member posted a question on the reflector about why we use Lower Sideband (LSB) on 80-meters and 40-meters, but Upper Sideband (USB) on 20-meters and above. He received a prompt and correct response, but there is a little more to the story and an opportunity to touch on a bit of our history and take a look at the modulation & mixing techniques that go into our radios. You might also learn something that keeps you out of trouble.

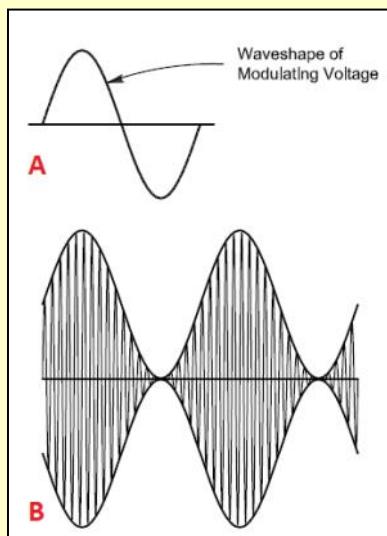
Modulation begins with a carrier, or more accurately, a reference signal, shown in figure 1 on a spectrum analyzer.



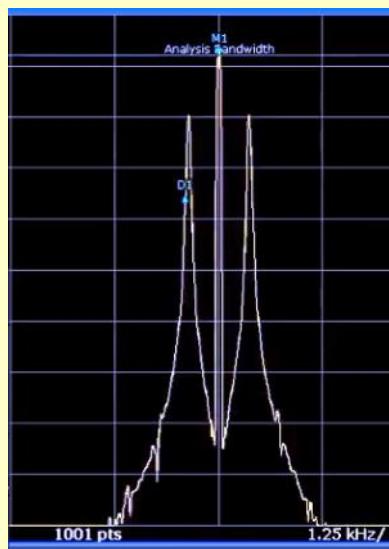
The carrier is a pure, unmodulated radio frequency (RF) signal. CW operators, sending Morse code, simply turn the carrier on and off to transmit. But if you're sending a voice communication,

we need to modulate that carrier. That's done with a mixer circuit. As you probably recall from your license examination, when you mix two frequencies, the output is two signals, one at the sum of the two input frequencies and the other at the difference of the mixed frequencies.

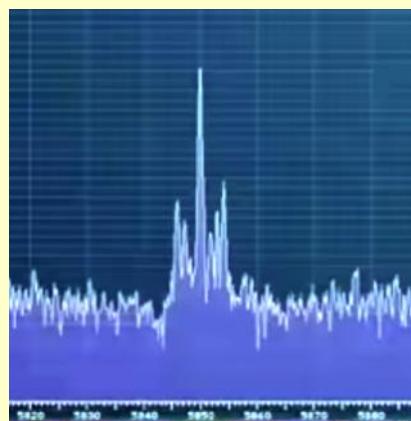
This mixing can be visualized as in figure 2. Figure 2-A shows the modulating signal, say a 3,000 Hz pure tone. Figure 2-B shows how the tone is imposed on the carrier causing it to vary in amplitude but not in frequency.



Note that the distance between the wave peaks inside the modulation envelope remain the same even as the amplitude changes. If we look at this modulation on a spectrum analyzer, figure 3, we see that the modulation products appear on either side of the carrier.



These products are our sidebands, one upper and one lower. If our carrier frequency is 3,980 kHz, then the lower sideband is centered on 3,977 kHz and the upper sideband is centered on 3,983 kHz. Figure 3 shows these sidebands as nice, clean, spikes on the spectrum analyzer. That's because the modulating signal in this case is a pure 3,000 Hz sine wave, probably a note you can hit when you whistle. In practice, voice communication is a complex waveform with lots of different audio frequencies. A realistic spectrum display of actual voice modulation is seen in figure 4, taken from a panadapter showing lots of audio content in the sidebands.



As the frequency of the audio content increases, each sideband moves farther away from the central carrier frequency.

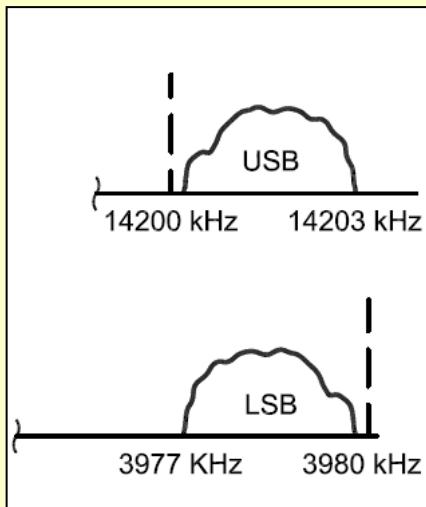
A lot of power goes into transmitting that carrier and the two sidebands, and since the two sidebands carry identical modulation content, wouldn't it be nice if we could eliminate all but one sideband? The mathematics for doing just that is practically ancient, from 1914. The first single sideband experiments took place in 1915, the same year that a patent was granted for the technique. The technology was refined by the U. S. Navy and by Bell Telephone Laboratories, but it didn't catch on in the amateur ranks until after World War II.

Nowadays we're on a first-name basis with Single Sideband, but SSB's full name is Single Sideband Suppressed Carrier (SSBSC) since the carrier and one sideband are filtered out before the signal leaves the transmitter.

(Continued on page 9)

Why The Sideband Convention? (cont'd)

The location of those sidebands is graphically shown in figure 5. This is the part that can keep you out of trouble.



Take a good look at figure 5 and note the dashed line indicating the carrier frequency, or where the carrier would be if it were transmitted. That is the frequency that's displayed in glowing digital numerals on your rig, *not* the frequency of the sideband. This is why the carrier is more properly called a *reference frequency*, since the carrier is not there, only its ghost. And how can that get you into trouble? Suppose you hold a general class license and park your VFO on 3,800 kHz, then call CQ using LSB. Your sideband, the actual frequency of your transmission, falls into the advanced class portion of the band. Similarly, if you swing over to 20 meters and set your VFO on 14.350 MHz with USB, your upper sideband signal is entirely outside of the amateur band. The FCC takes a dim view of such operation.

So that explains sidebands but why do we use LSB for 80- and 40-meters but USB for 20-meters and above? That's a matter of history and we must largely thank Anthony Vitale, W2EWL, for this quirk of fate. In March of 1956, Vitale published an article in March 1956 *QST*, "Cheap and Easy S.S.B.". The cheap part came from basing his sideband rig on a military surplus ARC-5 transmitter that could be picked up for under \$8.00. Even for 1956, that's dirt cheap.

These ARC-5 transmitters were real work horses for the military during the

war and they still may be found for sale at hamfests today.

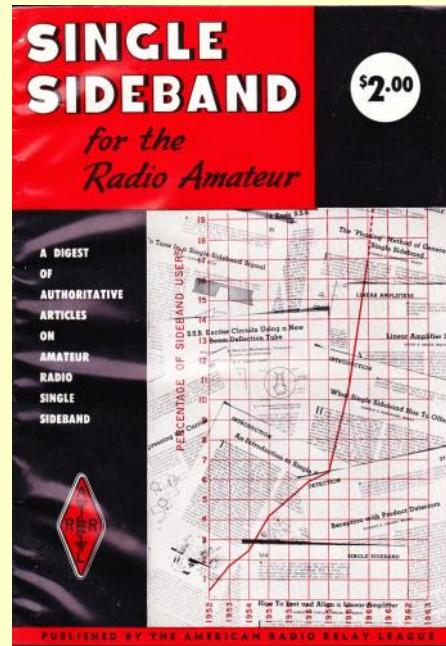
Figure 6 shows an ARC-5 in the collection of the Smithsonian Air & Space Museum. The ARC-5 was not a single sideband rig, but it had the virtue of being readily converted into one.



The ARC-5 used a 5 MHz VFO. In Vitale's scheme, a 9 MHz signal was generated and mixed with the 5 MHz signal from the VFO which was then mixed with the audio content. Mixing two RF signals works just like the mixing of one RF and one audio signal as we earlier described. The lower sideband result of this mixing lands on 4 MHz, since 9 minus 5 is 4. That puts the LSB in the 80-meter band. Similarly, 9 plus 5 is 14, placing the USB in the 20-meter band. So, the ARC-5 provided LSB coverage from 4.0 MHz to 3.5 MHz, and USB coverage from 14.0 MHz to 14.5 MHz. And that's largely how the convention of using USB & LSB on particular bands developed. There is no requirement to stick to the convention, and there were, of course, other rigs capable of transmitting SSB. But if you had one of those more sophisticated rigs and you wanted to converse with someone running an ever-popular ARC-5, you would have to meet them on their ground.

The ARRL was really behind a big push to get amateurs to switch from AM to SSB. The bands were crowded in the late 1950s and early 1960s, and sideband is much more economical in bandwidth, with each SSB QSO taking

up less than half of that needed for a full AM signal. To encourage the change, in 1962 the ARRL collected dozens of SSB articles and published, *Single Sideband for the Radio Amateur* (figure 7), which included Vitale's 1956 piece along with others such as, "Which Sideband is he Using?" and "Cheap and Easy S.S.B. Goes on 15."



That's not quite the end of this story. To demodulate a single sideband transmission, you need to have the carrier. The key is to generate that carrier locally, inside the receiver, in a local oscillator. Using the example we started with, take the 3,977 kHz modulated sideband, mix it with a 3,980 kHz signal inside the receiver Beat Frequency Oscillator (BFO) and out pops the original 3,000 Hz tone. And, alas, my little shortwave receiver that I had in third grade lacked a BFO. All I heard is what you can hear if you switch your transceiver to AM and tune across the voice segments of our bands. I suspect that little ARRL publication tipped the scale for the hams in my area of Florida, convincing them to get on the SSB bandwagon and, unknowingly, leaving a little shortwave listener in the dark. I was stuck listening to a bunch of Donald Ducks.

In Other News

Radio Amateur Takes Part in Historic First Commercial Human Spaceflight to ISS

Bob Behnken, KE5GGX, was one of two NASA astronauts who made spaceflight history over the weekend. Behnken and Doug Hurley were the first astronauts since the 1970s to make a water landing, after their Crew Dragon capsule splashed down in the Gulf of Mexico on Sunday. On May 30, the pair made history as the first live crew to be launched into space in a commercial vehicle, for a stay on the International Space Station (ISS), marking the return of human spaceflight to US soil for the first time in nearly a decade.

A SpaceX Falcon 9 vehicle carried the crew into orbit from Cape Canaveral. The so-called “Demo-2” was the last major test for SpaceX’s human spaceflight system, to be certified by NASA for operational crew missions to and from the ISS. Four huge parachutes carried the Crew Dragon capsule to a safe splashdown near Pensacola, Florida, on Sunday, August 1.

“On behalf of the SpaceX and NASA teams, welcome back to planet Earth,” SpaceX Engineer Michael Heiman radioed to the crew after their landing. “And thanks for flying SpaceX.”

NASA Administrator Jim Bridenstine proclaimed that the US was entering a new era of human spaceflight, noting that NASA was no longer the only option for US space travel. “We are going to be a customer,” he said. NASA has contracted with two companies — SpaceX and Boeing — to ferry astronaut crews to and from the ISS.

While part of the space station crew for 2 months, Behnken and Astronaut Chris Cassidy, KF5KDR, the sole American on board when their Endeavour capsule docked, carried out four spacewalks to install new batteries on the ISS.

The SpaceX Crew Dragon vehicle was designed for short-term missions, and Behnken and Hurley’s mission had only been expected to last a week. As a result, Behnken did not receive Amateur Radio on the International Space Station (ARISS) training on the radio gear in the Russian sector. NASA subsequently decided to monitor the mission and make a decision on how long the Crew Dragon would stay. Cassidy fielded all ARISS school contacts.



Source: <http://www.arrl.org/news/radio-amateur-takes-part-in-historic-first-commercial-human-spaceflight-to-iss>

Net Managers Corner

Monday Night 2 Meter “Want, Swap, Sell, and Information Net”

GARS NEEDS MEMBERS TO SERVE AS NET CONTROL STATIONS!

GARS is a great Amateur Radio service club and we have the membership and awards to prove it. Our club is a very busy and active club and we use the Monday night net to get the information out to our members. Weekly participation is needed to make our net function well. There is only a small group of very dedicated people that make the net happen each week, and we need more members to volunteer to serve as Net Control Stations (NCS) on a rotating basis.

Out of almost 300 members, there are only SEVEN primary people who serve as NCS for the GARS net every Monday night. In no particular order, they are:

Don - KW4AL	Ray - N4GYN	Bill - KK4AUA
David - KA4KKF	Kevin - KK4WOG	Chuck - KK4TKJ
Russell - AB4QQ		

As GARS Net Manager (Chuck KK4TKJ), I really need 26 people to fill NCS positions. I do plan and post the schedule months in advance. Any conditions will be accommodated that you as a rotating NCS need to place on the scheduling of your duties. If your plans change, I can make adjustments for the schedule to work, and I will make those changes happen as soon as I am notified of a problem. As Net Manager, I also send out reminders each week to let the NCS scheduled know he or she is NCS for the next Monday night net. In short, serving as a rotating NCS is a small duty but a great contribution to the club.

The “Want, Swap, Sell Information Net” begins promptly at 19:30 every Monday night and runs about 45 minutes. As a scheduled NCS, you will request the assistance of a volunteer alternate NCS each time you have Net Control. Your simple duties will be to tune in to the GARS repeater, read the script, take a few notes and forward the information to me for record keeping.

Please lend a hand and contact me at KK4TKJ@arrl.net. Sign up to help support the effort that makes GARS the great club that it is.

73 and see you on the Nets!

Chuck McCord, KK4TKJ

GARS Net Manager

GARS Membership Page

New GARS Members in July

N/A

New Members: 0

Total Members as of July 31, 2020
335

Join GARS members for our weekly breakfast gathering at 7:30 AM most Saturdays

Now at

Cracker Barrel Restaurant
75 Celebration Dr.
Suwanee, GA 30024

(Directions)

The following members are celebrating birthdays in August:

**HAPPY BIRTHDAY!!
From All of Us at GARS**

**Dave Adanich (K8WDJ)
Kyle Albritton (W4KDA)
Emory Albritton
Bruce Brown (WA8IQF)
Stephen Dearman (KI4IXR)
Billy Fallin (KN4ZFB)
George Guerin (KM4BOS)
David Harden (KJ4CMY)
Jared Hawkins (KM4SSI)
Gary Jones (W4HX)
Richard Jones (KM4JLB)
Cheryl Kempster
Ron Langston (WE5O)
Samuel McClure (KM4AAO)
Lige Sims (AB4OK)
Robert Sloan (WA4DD)
Tony Vitolo (W4AV)
Larry Whited (AB4NX)**

GARS MEMBERSHIP

Your current GARS membership status is shown in the monthly newsletter e-mail towards the bottom of the message.

To become a GARS member, or to renew your GARS membership, please visit our website—<http://www.gars.org>

To make changes to your GARS membership (moved, new e-mail address, new phone number, etc.), please e-mail the Membership Committee - membership@gars.org

You can **renew or update** your Amateur Radio license information with the FCC at their website for free <http://wireless.fcc.gov/uls/index.htm?job=home>

To update your ARRL information, please visit their website - <http://www.arrl.org>

Membership Chair: Karen Albritton, KI4HPP
Committee Members: Dave Bruse, W4DTR, Pam Meridy, WB1AKQ,
Ivette Santiago, KN4OYE , Cathy Kelley, KN4DML

EXTRA! EXTRA!

Repeater Status

6M	Currently down
147.075	Operational in Snellville
147.255	Operational in Snellville
224.580	Operational in Grayson
442.100	Operational at Goshen Springs
442.325	Operational in Buford
444.525	Operational in Snellville

Link remote receivers being added

Donating to GARS

Your GARS donation can be used for a certain purpose by donating to one of these funds:

- GARS SK Memorial Fund for Education (to remember and honor Silent Keys);
- GARS Scholarship Fund (Administered by the ARRL for awarding scholarships);
- GARS General Fund (any club purpose).

GARS has joined these rewards programs (a portion of every purchase you make through these merchants may be donated to GARS):

- Amazon Smiles;
- Kroger Community Rewards program.

For more information on how to sign up for these rewards programs, or to donate to GARS, visit
<http://gars.org/gars/donations-to-the-club>

GARS on Social Media

GARS has moved to [Groups.io](#)!



Join GARS on Groups.io:
<http://gars.org/groups.io>



Visit GARS on Facebook:
<http://gars.org/facebook>



Follow GARS on Twitter:
<http://gars.org/twitter>



Join GARS on YouTube:
<http://gars.org/youtube>

G A R S Volunteers

OFFICERS

John Davis, President	WB4QDX	
Sandy Jackson, Vice President	KJ4DRO	
Joe Biddle, Secretary	AD4PZ	
Pam Meridy, Treasurer	WB1AKQ	
Randy Collins, Program Manager	N4COR	

MANAGERS/COMMITTEE CHAIRS

Karen Albritton, Membership Chair	KI4HPP	
Dave Bruse, VE Team Leader	W4DTR	
David Adcock, Webmaster and Field Day Chair	KA4KKF	
Ralph Pickwick, Apparel Manager and Education Chair	KJ4CNC	
Glen Wendt, TechFest Chair	W3WWT	
Bill Eggers, GARzette Editor	WB2RIS	
Eddie Foust, Repeater Chair	WD4JEM	
Mike Weathers, WAS / DXCC QSL Card Checker and Historian	ND4V	
Chuck McCord, Net Manager	KK4TKJ	
Technical / RFI Advisor	Open	
Joe Biddle, Winter Field Day Chair	AD4PZ	
Kyle Albritton, Multimedia Chair	W4KDA	
Don Stewart, Elmer Manager	KW4AL	
Dave Slotter, Georgia QSO Party Chair, Workshop Leader and Public Information Officer	W3DJS	

DIRECTORS AND TRUSTEES

Kyle Albritton, W4KDA		Rick Cobb, N4XYY	
Mike Weathers, ND4V		Bill Cherepy, WB4WTN W4GR Trustee	

GARS MEETING AND WORKSHOP MINUTES

Gwinnett Amateur Radio Society GENERAL Meeting Minutes 7/14/2020

President John Davis (WB4QDX) and Opened the meeting at 7:00pm and Closed the meeting at 8:30pm (Covid-19 Alternative Online)

Online participants: ~37

Treasurer Report: Pam Meridy (WB1AKQ) – read the financial report.

Membership Report: John reported the Membership is at [335].

Programs – Randy (N4COR) the programs lineup:

- July – Mickey Baker (N4MB) - ARRL Southeastern Division Director
- August—TBD

Workshop – Dave (W3DJS) reported the Workshop would be going online.

- July – Oscilloscopes

Field Day 2020 – Dave (KA4KKF) reports our scores from 30 stations are way up.

Memorials (SK) – Dave (W4DTR) reports the following Silent Keys:

- Antoinette Bigham (KK4WOB)
- Robert Hoppe (KI4SBT)
- Ricky Barnes (W4IXN)

GARS will be purchasing a Memorial brick for each one for the ARRL Memorial Gardens.

GARS Covid19 Madness Sprint – Dallas (KD4HNX) describes the activity/contest parameters. See the GARS website for additional details.

GARS Education – Ralph (KJ4CNC) mentions again:

All activities cancelled due to Covid-19.

Program – Mickey Baker (N4MB) - ARRL Southeastern Division Director on ARRL inner workings and Amateur Radio successes and challenges.

Submitted by: Joe Biddle (AD4PZ) GARS Secretary

[Note: Minutes are published as they are recorded. Event information may be incorrect.—Ed.]

(No July Workshop minutes available)

ARRL CONTESTING INFO

From ARRL Contest Calendar
> For more information click the links <

August 2020

- 1-2 [222 MHz and Up Distance Contest](#)
15-16 [10 GHz & Up – Round 1](#)
16 [Rookie Roundup – RTTY](#)

September 2020

- 12-13 [EME - 2.3 GHz & Up](#)
12-14 [September VHF](#)
19-20 [10 GHz & Up - Round 2](#)

October 2020

- 10-11 [EME - 50 to 1296 MHz](#)
19-23 [School Club Roundup](#)

November 2020

- 7-9 [Nov. Sweepstakes - CW](#)
21-23 [Nov. Sweepstakes - Phone](#)
28-29 [EME - 50 to 1296 MHz](#)

December 2020

- 4-6 [160 Meter](#)
12-13 [10 Meter](#)
20 [Rookie Roundup – CW](#)

January 2021

- 1 [Straight Key Night](#)
2 [Kid's Day](#)
2-3 [RTTY Roundup](#)
16-18 [January VHF Sweepstakes](#)

February 2021

- 8-12 [School Club Roundup](#)
20-21 [International DX – CW](#)

March 2021

- 6-7 [International DX – Phone](#)

April 2021

- 11 [Rookie Roundup – Phone](#)

(no ARRL contests in May)

June 2021

- 12-14 [June VHF](#)
19 [Kid's Day](#)
26-27 [Field Day](#)

July 2021

- 10-11 [IARU HF World Championship](#)

For more information:

<http://www.arrl.org/contest-calendar>

HAMFEST CALENDAR

08/08/2020 - 08/09/2020

QSO Today Virtual Ham Expo

Location: Los Angeles, CA

Type: ARRL Convention

Sponsor: KEG Media, Inc. dba QSO Today

Website: <http://qsotodayhamexpo.com>

08/22/2020 - 08/23/2020

Huntsville Hamfest - ARRL Southeastern Division Convention (CANCELLED)

Location: Huntsville, AL

Type: ARRL Convention

Sponsor: Huntsville Hamfest Inc.

Website: <http://hamfest.org>

11/07/2020 - 11/08/2020

Stone Mountain Hamfest, ARRL GA Section Convention (CANCELLED)

Location: Lawrenceville, GA

Type: ARRL Convention

Sponsor: Alford Memorial Radio Club & Gwinnett Amateur Radio Society

Website: <http://www.stonemountainhamfest.com/>

For more information: <http://www.arrl.org/hamfests-and-conventions-calendar>

When searching by division, remember some states adjacent to GA are in different divisions:
Southeastern: GA, AL, FL Delta: TN Roanoke: NC, SC



GARS Events Calendar for 2020

TechFest (www.techfest.info)	January 18
Winter Field Day	January 25&26
General HamCram	TBD
Dog Show Fundraiser	Canceled for 2020
Georgia QSO Party	April 11 (home ops)
North metro area Fox Hunt	April
Memorial Day Parade	Canceled for 2020
ARC/KARC Hamfest	Canceled for 2020
Field Day	June 27&28
Tech HamCrams	Mar (canceled), Nov
JOTA	October
Maker Faire	TBD
Stone Mt. Hamfest	Canceled for 2020
Holiday Party	December

GARS Recurring Calendar

- ◆ 2nd Tuesday of the month at 7 pm (except December): Monthly Club Meeting (**online until further notice**)
- ◆ 3rd Tuesday of the month at 7 pm (except December): Monthly Workshop (**online until further notice**)
- ◆ 2nd Sunday of the Month at 2 pm (**suspended until further notice**): GARS Ham Exam Session
Fire Station #24
2735 Mall of Georgia Blvd
Buford, GA 30519
- ◆ Every Monday at 7:30 pm: GARS Want, Swap, Sell, and Information Net on the GARS 147.075 MHz repeater
- ◆ Every Monday at 8:30 pm: ARES Training on the GARS 147.075 MHz repeater
- ◆ Most Saturdays at 7:30 am : GARS Weekly Breakfast
Cracker Barrel Restaurant
75 Celebration Dr., Suwanee, GA 30024

September GARS Meeting:

Having Fun With QRP
by Steve Hudson, AA4BW

GARS CALENDAR OF EVENTS FOR AUGUST 2020

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
July 26	July 27 7:30 - 8:00 pm GARS 2m Net	July 28	July 29	July 30	July 31	1 Breakfast at Cracker Barrel in Suwanee 7:30 AM
2	3 7:30 - 8:00 pm GARS 2m Net	4	5	6	7	8 Breakfast at Cracker Barrel in Suwanee 7:30 AM
9 GARS VE Team Testing Session (Canceled)	10 7:30 - 8:00 pm GARS 2m Net	11 7:00 - 9:00 pm GARS Meeting (Online)	12	13	14	15 Breakfast at Cracker Barrel in Suwanee 7:30 AM
16	17 7:30 - 8:00 pm GARS 2m Net	18 7:00 - 9:00 pm GARS Workshop (Online)	19	20	21	22 Breakfast at Cracker Barrel in Suwanee 7:30 AM
23/30	24/31 7:30 - 8:00 pm GARS 2m Net	28	26	27	28	29 Breakfast at Cracker Barrel in Suwanee 7:30 AM

Metro Testing Sessions

[Please check with each session contact for current status.—Ed.]

GARS publishes Metro Atlanta VE exam schedules as a service and is not responsible for errors or changes. Call and confirm schedules before going. All sessions are walk-in, unless otherwise noted. Take copies of current license and certificate of completed elements with you to all sessions. Find additional sessions online at <http://www.arrl-ga.org>.

First Sunday, ODD Months

2 pm (Jan, Mar, May, Jul, Sep, & Nov)
VEC: WCARS
Braselton Public Utility Building
4986 Highway 53, Braselton, GA
Contact: Roger Gibson, WB4T
(770) 271-4210 or (770) 712-9560
w4rlg@bellsouth.net

First Sunday, EVEN Months

2 pm (Feb, Apr, Jun, Aug, Oct, Dec)
VEC: WCARS
Hall County EOC
470 Crescent Dr. Gainesville, Ga.
Contact: Perry Roper, KO4RD
(770) 536-3056

Second Saturday

10:00 AM
Alpharetta North Park, Adult Activities Center
13450 Cogburn Rd, Alpharetta, GA 30004
Contact: Ian Kahn, KM4IK
[E-mail: km4ik.ian@gmail.com](mailto:km4ik.ian@gmail.com)

Third Saturday, ODD Months

VEC: ARRL
9:30 am (Walk-ins welcome)
Stone Mountain Masonic Lodge
840 VFW Drive
Stone Mountain, GA 30083
Contact: Frank Haynes, KV4SP
[Email: fhaynes@vatmom.net](mailto:fhaynes@vatmom.net)
(678) 467-3712

Second Sunday

VEC: W5YI
2 pm
Fire Station #24
Mall of Georgia Boulevard
Buford, GA 30519
Contact: Dave Bruse, W4DTR
[E-mail: exams@gars.org](mailto:exams@gars.org)

First Sunday, EVEN Months

VEC: WCARS and W5YI
2 pm @ Barrow Co. Emerg. Serv. Bldg
66 McElroy Street
Winder, GA 30680
Contact: Mike Wolcott, W4WYI
(404) 281-6581
[E-mail: W4WYI@ARRL.net](mailto:W4WYI@ARRL.net)
(cont. next column)

Ham Exam Results

July Results

No July VE Session

[Other local clubs are starting to hold limited VE sessions. See the articles on Page 6 in this issue of the GARzette for more details. — Ed.]

GARS VE Team Leaders
E-mail: exams@gars.org

GARS VE Website:
<http://gars.org/exams>



Fourth Tuesday

ARRL VEC
7 pm @ United Way Service Center
6279 Fairburn Rd., Douglasville
Contact: Jessie Clower, KB4WFK
(770) 942-6466

Fourth Sunday

2:30 pm Georgia Tech
VanLeer Elec. Building
Rm. W218, 777 Atlantic Dr.
For more information go to
www.w4aql.com and click on "Test Sessions"

Metro Club Meetings

[Please check with each club for meeting schedule and method (online, etc.) - Ed.]

First Tuesday

Kennehoochee ARC
Fire Station #1, Training Room
112 Haynes Street, Marietta, GA
Meeting begins at 7:00pm
Talk In 146.880(-)

First Thursday

Atlanta Radio Club
Georgia Red Cross HQ
1955 Monroe Dr., Atlanta, GA
Meeting is at 7:30pm
Talk In -146.820(-)

N.E. Georgia ARC

Commerce Public Library
1344 South Broad Street, Commerce, GA
Meeting is at 6:30pm
Talk In - 147.225(+), PL 123.0

Second Monday

Georgia Tech ARC
Room W218
Van Leer Electrical Engineering Bldg.
Georgia Tech Campus
Meeting at 7:00pm

Sawnee Amateur Radio Association
Beaver Toyota
1875 Buford Highway, Cumming, GA
Meeting at 6:30

Second Thursday

Alford Memorial Radio Club
Annistown Road Baptist Church
Annistown Rd & Spain Rd
Stone Mountain, GA
Dinner at 6:00pm, Meeting at 7:30pm
Talk In - 146.760(-)

Second Saturday

North GA QRP Club
Board Room of The Shepherd Center
2020 Peachtree Rd, NW, Atlanta, GA
at 10:00 AM

Third Tuesday

North Fulton Amateur Radio League
Alpharetta Recreation & Parks Dept.
Alpharetta Adult Activity Center
13450 Cogburn Road, Alpharetta, GA
meeting at 7:30pm
Talk In - 145.47(-)

For more information, go to:
<http://www.gars.org/>

[Note: No store access; curbside delivery available until further notice. - Ed.]

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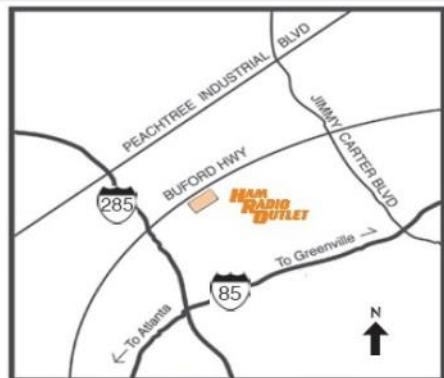
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Mid-Atlantic (800) 444-4799
New England (800) 444-0047



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